DOCUMENT RESUME

ED 272 091 HE 019 533

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TITLE The Phases of Adjustment to Professional Education.
PUB DATE 16 Apr 86
NOTE 40p.; Paper presented at the Annual Meeting of the American Educational Research Association (67th, San Francisco, CA, April 16-20, 1986).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Coping; *Dental Students; Egocentrism; Helping Relationship; Higher Education; *Interpersonal Relationship; Peer Relationship; Personal Autonomy; *Professional Autonomy; Professional Development; *Professional Education; Psychological Patterns; *Social Behavior; *Student Adjustment; Student Attitudes; Student Behavior

ABSTRACT

The effect of a patient care oriented dental school curriculum that integrated the basic sciences with dental and clinical sciences was investigated. The focus was to understand the processes by which entering dental students progress through the first year of the new curriculum and to assess the effect of the curriculum on students' professionalization. The study employed a survey-questionnaire, standardized occupational interest inventory, document analysis, participant-observation, and personal interviews. For 89 students entering dental school in fall 1984, three phases of adjustment to professional education were assessed: development of a class identity, development of mechanisms to cope with uncertainty, and development of independence. Students' awareness that they were experiencing a new curriculum helped develop class identity. Interpersonal relationships developed within the class that were supportive and collegial. Simultaneously, a pattern of independence developed, since the evaluation system discouraged requesting assistance from faculty. As the year progressed and requirements increased, students began to exhibit self-oriented, self-sufficient, Machiavellian behaviors, with a decrease in group support behaviors. They were less humane or other-oriented. A three-page bibliography concluded the document. (SW)

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The Phases of Adjustment to Professional Education

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a paper to be presented at AERA
April 16, 1986
San Francisco, California

ME 019 533

INTRODUCTION

The study of professional socialization has a long and rich tradition. Professions such as education, law, medicine, and nursing have been studied extensively to determine by what processes a neophyte becomes encultured into a professional group. Research of professional socialization has been qualitative or quantitative, with the qualitative approach allowing better adaptability to a variety of natural settings and capability to delve beneath surface interactions to the meaning of events as perceived by the participants. This information not only increases the volumes of sociological literature, but provides vital information to members of professions regarding their own traditions, norms, and customs, as perceived by the professional-to-be and by outsider-researchers.

One profession which has received little attention regarding professional socialization is dentistry. Only during the last thirty to forty years has dental research provided enough clinically relevant data for dentistry to be more than a technical field. With the advent of preventive dentistry movement in the late 1960's, dentistry can no longer be considered a repair oriented profession. Great strides have been made in both the philosophy and practice of dentistry. However, little is known about professional socialization processes by which neophytes become dentists. The major studies which have

been reported (Sherlock and Morris, 1972; Helfrich and Quarantelli, 1974) were conducted in the early 1960's and reported primarily quantitative findings. There appears to be no 'grounded theory' of dental professional socialization.

Past literature on the professional socialization of dental students has indicated that students become 'cynical' and less humanitarian with a tendency toward inflexible self-sufficiency (Heist, 1960; Kirk, Cummings, and Hacket, 1963; Hutton, 1968; Silberman, 1976; Eli and Shuval, 1982) and a change from being other-centered to being self-centered and self-serving, or Machiavellian (Helfrich, 1972; Vinton, 1978). Sherlock and Morris (1972) suggested that the learning environment and interpersonal relationships fostered by the curriculum had a direct effect on dental student behavior, attitudes, and values. This concept has also been suggested in related studies of medical students (Becker and Geer, 1958; Becker, Geer, Hughes, and Strauss, 1961; Merton, Reader, and Kendall, 1957) and discussion of socialization to organizations (Bloom, 1973).

Qualitative research methods allow the complexities and nuances of the processes of education and/or socialization to guide the researcher's understanding of student/subject behavior, thus 'grounded theory' building. This research paradigm is found extensively in the professional socialization literature, except in that literature dealing with dentistry. The literature which describes dental students as becoming 'cynical' and

'Machiavellian' is expressed in quantitative terms and based on measureable outcomes without taking into account the natural activities leading to the 'outcomes'.

A Study of Dentists' Professional Socialization

As stated above, the review of dental professional socialization literature has revealed that dental students have been characterized as 'cynical' and 'Machiavellian', rather than humanistic and other-oriented. It was suggested by Sherlock and Morris (1972) that this phenomenon was possibly situational adjustment to the ordeals of dental school, not true changes in the students' attitudes and values. In the revieved literature, there was a description of outcomes of professional socialization, but there was no description or discussion of the process by which the outcomes are achieved, or the differential response to dental school resulting from anticipatory socialization or individual differences. Negative cases were not addressed.

With changes in the overall concepts of dentistry and dental practice, the process of training dentists is being modified accordingly. Emphasis of dental education is no longer on technical skills alone, but on total patient care and interpersonal relationships. A new curriculum at a major dental school in the United States, which will be called Innovative Dental School (IDS), has been designed to address these issues

through integration of basic sciences with dental and clinical sciences, with the expressed purpose of training a humane, highly competent general dentist who conceptualizes dentistry holistically. If, indeed, the design of this curriculum can achieve this goal, then the outcome should not be a 'cynical', self-oriented dental student, but a humanistic, other-oriented student. Since this curriculum is innovative in its approach to dental education, this study examined the effects of this curriculum on the dental student and the professional socialization processes resulting from the implementation of this curriculum. The 'ideal' professional socialization study to accomplish these two goals would have been a five year longitudinal panel study following one entire class from matriculation, through four years of dental school, and one year of residency. For this particular study, the researcher conducted the first year of such an 'ideal' study.

Setting and Subjects

The setting for this study was an established dental school, which will be called Innovative Dental School (IDS), in a large city in the United States. It was a dental school which was world renown for its faculty and the innovative research conducted by them. The guiding educational philosophy of this dental school was that, in order for graduates to be able to promote dental health and control dental disease, the study of dentistry must be total patient care oriented, expanding the

study of human biology and behavioral sciences in relation to dentistry to be more in alignment with medical education. Major curricular changes were occurring in IDS. As described above, a new and innovative curriculum, which emphasized primary care and introduced a collaborative approach to dental education, was being phased into full implementation.

Subjects in the study were all first year students entering IDS in the fall of 1984. In order to be admitted to IDS, each candidate passed through a rigorous admissions process. Those students admitted to IDS were considered to be comparable to those admitted to other dental schools in the United States, including academic record and socio-economic status. In the past two years, 7-10% of the entering class was minority and 26-28% were female. It should be noted that the size of the entering class has been reduced from 162 entering in 1982, to 89 entering in 1984. Reduction of the class size was attributed to a reduced applicant pool and a reduction in the incidence of dental disease in IDS's patient pool. One factor which directly affected the applicant pool and the enrolled class size was the tuition for IDS. Total estimated costs for a student for the academic year 1983-84 were $20,735.00, not including living expenses. The cost of attending IDS was considered a major factor effecting the student population who enrolled in IDS.

Significance

This study is significant in four dimensions. First, the

new curriculum was tested and evaluated through a three year pilot study. The results were presented by descriptive statistical comparisons and correlations between the pilot/test groups and the traditional/control groups, all of whom were members of the same cohorts within IDS (Cohen, Cormier, and Cohen, 1985). The students test group was small (a total of 12 per class) compared to the traditional group (approximately 150 per class), and considered to be 'special' by all members of IDS community. The faculty who taught only the test group were also considered to be 'special'. The project evaluation indicated these two 'special' groups as being more cohesive and collegial separately and together, as compared with the student and faculty control groups (Cohen, 1985). This finding was attributed to the new curriculum, not the uniqueness of the situation. A case study of how a dental class as a whole encounters and progresses through the new curriculum would be able to 1) identify the processes by which the students and faculty become cohesive and collegial, and 2) demonstrate whether the pilot study results suffered from a Hawthorne effect.

Secondly, since the curriculum is new to IDS as a whole, information on how the students perceive their encounter with and progress through the curriculum will provide information for the IDS curriculum committee and faculty to aid them in any modifications needed to assure fulfillment of the stated curricular goals. In addition, this information will be useful in

helping explain unanticipated outcomes during implementation of the curriculum.

Thirdly, information on the student-culture of the first year class will be of value to faculty and administrators on IDS in their attempts to 'understand' the class. Often individual students are, or an entire class is, categorized by faculty members or administrators through faculty caveats and anecdotes of events occurring during classes, labs, and/or exams. The overall nature of a caveat or anecdote will reflect the biases and expectations of the faculty member, and probably not the motivations and expectations of the student or class; however, caveats and anecdotes are often used to explain student behavior and class culture. Finally, information obtained from this study will augment the literature on adult learning as exemplified in professional education.

Limitations

Because this was a case study of a unique and innovative dental curriculum, there were several limitations for the study. First, since Participant-Observation was the major research method used to study processes of professional socialization, the researcher was the primary research instrument. Being in this position forced her to constantly be aware of and consider the following:

a. her inability to be in all classes, labs, and social activities due to being only one person;

b. her dependance on informants in the class for data about activities or events unable to directly observe or in which to participate;

c. her dependance on informants who had biases (positive or negative) toward the researcher, her project, IDS, and/or the activities or events in question;

d. students reactivity to the presence of the researcher within the setting due to her role and her purpose; and

e. her personal biases, prejudices, likes and dislikes regarding dental students, dentistry, IDS, and/or the new curriculum based upon past experiences and preparation for this project.

Secondly, since the researcher was an active member of the IDS faculty during the timespan of the study, the researcher had to be aware of and consider the following:

a. student misinterpretation of the researcher's purpose, i.e., being considered a 'spy' from the administration;

b. faculty misinterpretation of the researcher's purpose, i.e., being disloyal to the faculty;

c. personal knowledge of dentistry and dental education preventing questioning observed phenomena, allowing acceptance of student remarks without questioning further for underlying meanings, and biasing interpretation of data; and

d. personal 'over identification' with her subjects biasing

interpretation of findings.

Thirdly, since the curriculum itself was different from any other dental curriculum, except for basic concepts, generality of the study was severely limited. Unless another dental school were to adopt the exact curriculum and developed the exact educational environment present within IDS during the time of the study, specific outcomes for the subjects of this study were limited to this setting.

Fourthly, since the study was limited to the one year of encounter with the new curriculum, the researcher was unable to determine whether findings were the results of situational adjustment (Becker, 1964) to the first year, or actual lasting change in the students. Only through a four to five year longitudinal study could this be attempted. Even then, one would find confounding results based upon whether a residency was taken and where; as well as where dental practice was anticipated and in what format.

Finally, the processes of data reduction and analysis inherent within a case study limited the outcome of the study. Since the researcher was the primary research instrument, there was a natural data selection/reduction based upon what the researcher could observe directly or learn about from informants. Data analysis reduced the data further into general categories or hypotheses which were derived by the researcher, who was the sole analyst.

Although there were limitations to this study, the overall research protocol was designed to compensate for each limitation through a multimodal approach and triangulation of data to assist in verification of concepts, categories, and hypotheses which arose from the data.

Research Methods

The purpose of this study was to understand the processes by which first year dental students progress through the first year of an innovative curriculum and to assess the effect of the curriculum on the professionalization of the participants. The researcher used a field study approach for this study in order to obtain a broad, yet indepth, view of the processes involved. For the researcher to ascertain how students reacted to the curriculum, and the effects of the curriculum on interpersonal relationships which develop in the setting, she believed a first hand, naturalistic approach to be most appropriate.

Field study methodology is not merely one data collection technique. While a researcher may choose to use only one data collection technique, there are several which are included under the umbrella of field methodology, e.g., document analysis, intensive interviewing, participant-observation, ethnographic survey, sociogram, and film. This study of first year dental students in relation to a new curriculum used a multimodal approach to a field study, with each data collection technique having a specific purpose, as well as contributing to

understanding the entire setting. Techniques used were (a) survey-questionnaire, (b) a standardized occupational interest inventory, (c) document analysis, (d) participant-observation, and (e) personal interviews. The data from the standardized occupational interest inventory and document analysis were used to describe the members of the Class and to facilitate comparison with previous IDS classes. The survey-questionnaire was used to demonstrate changes in attitudes and values of the Class, males versus females, and between and across General Dentistry lab groups, as a result of the curricular experience at IDS. Each technique was used to confirm data from other techniques and to identify negative instances not discovered by other techniques, or 'triangulation' of data (Jick, 1979). Material presented in this paper was limited to the primary data collection strategy.

The primary data collection strategy was participant-observation. As stated previously, the purpose of this project was to gain insight into the initial socialization process by which first year dental students enter dentistry, as facilitated by an innovative curriculum. The most effective way to accomplish this goal was for the researcher to directly observe and participate with the students as they progressed through their first year of school (Blumer, 1962). The 'master role' of observer-as-participant (Gold, 1958) was selected by the researcher as being most appropriate for this study, with the specific role being the 'pseudo-role' of a student, as described

by Becker, Geer, Hughes, and Strauss (1961). During observation in the field, the researcher kept a daily log of events observed, conversations overheard, and casual/informal interviews with participants. Interviews were recorded as close to verbatum as possible. She kept a separate log for analytic notes in which she recorded in-field analysis of data separate from field notes of the daily log. Notes were taken as appropriate for the event. During classes and labs, the researcher took constant notes regarding sociometry of interactions as well as descriptions of events which occurred. During interviews and informal conversations, the researcher took mental notes to be recorded in detail as soon as the interview was completed. Since the researcher could not be constantly in the field for the full eleven months of the study, she developed informants in the class to assist her in data collection. She developed more than one informant in order to be more certain of accuracy of information. Information from informants were so noted in field notes to distinguish them from researcher noted information.

The researcher spent from September 1984 through June 1985 with her subjects. The months of September, January and June were devoted to constant observation of and participation with the first year class. Intermittent observation and interaction occurred during the between months. Initially the researcher attempted to be present during all functions to which the first year class was invited, within and outside the dental school. It

became evident early in the study that, in order to not compromise the study, interaction would have to be limited to activities related directly to the academic nature of dental school, omitting all extracurricular social events late at night and on weekends.

Findings

Eighty-nine individuals came together in September 1984 for the purpose of becoming dentists. Some of these people knew one another from college. Most had never met before, but they believed within the next four years a close bond would be formed by all the activities they would share. The were all drawn to IDS by promises of a curriculum and educational experience like no other. There were three basic phases of adjustment to professional education exhibited by this group. These were 1) development of a class identity; 2) development of mechanisms to cope with uncertainty; and 3) development of independence.

The Class Identity.

Many factors molded and shaped the overall group identity of the Class[1] of 1988; however, the major factor in shaping the class was the new curriculum and the environment created by its implementation. Unlike previous educational experiences, the dental school curriculum required the Class to be in lecture, lab, or seminar 8 hours per day, 5 days per week. Not all

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[1]The word Class will be capitalized when used as a proper name for the total subject population of the study.

requirements could be accomplished during scheduled time, thus many hours in the evenings and on weekends were needed to complete projects and/or study for exams. for many members of the Class who were used to free time during the week, this new schedule was a difficult transition.

> While people filed in for H/E, I overheard several conversations. Several were discussing the need for late night studying due to the amount of material to learn. Another group was talking about late night partying at the local tavern. (Field notes, 9-25)
>
> I go home after class and eat, then I study until 9:30 or 10pm. Then I really need a break, so some of us go to (the local tavern) for a few beers. Usually half the class is there. It's great. You should come. (Male student, 10-23)

One melding factor was that all members of the Class had the same schedule and same requirements. There was one course which was instrumental in development of the Class identity. In General Dentistry (GD) lab, the Class was divided into three separate groups, which were separated physically and had separate families of faculty. The group arrangement was to facilitate a closer relationship among students in the group, as well as students and faculty in the group. It was in these groups that the students practiced and tried to master the techniques of general dentistry. While each group followed the same course syllabus and required the same projects, how students responded

was a function of the GD group of which one was a member.

The group leader for any one GD group set the environmental tone for the group. How each students perceived and dealt with the course was a function of the group leader s overall approach to the course and the students. The group leader for group X was low-key in his approach to the course and very supportive of the students. The students in group X appeared relaxed in lab and relatively confident in their skills.

> I observed Group X today. After the practical exam, there what appeared to be diligent work on various projects, all of which are due in 3 days. As they worked, students joked and chatted with neighbors, but concentrated on own work. Many students indicated having several projects completed, but not checked. Unlike the last unit, there appeared to be less concern over the due data. People seemed relaxed. (Field notes, 1-28)
>
> I think he's great. I really like being up here. He's low-key and so are the instructors. They make it an easy atmosphere in here so we're not crazy. They [other 2 groups] just can't relax. If some of us are in their lab, we joke around and have a good time. But the guys down there always seem real uptight. (Female X student, 2-18)

The group leader for group Y was highly demanding and not supportive of the students in his group. The students in group Y exhibited high levels of stress and were rarely confident of

their skills.

> I wish I could get help. I've been trying to get a tutor, but that seems difficult. If someone would just watch me as I work and critique me. I get so frustrated. (Male Y student, 2-4)
>
> I'd be way ahead if I could get 15 minutes of instruction. I was told to use the burn-out tanks to get rid of this wax. Do you know how to use it? My instructor didn't have time to show me. (Male Y student, 4-29)

For group Z, the group leader was highly demanding, but highly supportive of the students. In response, the students were intense in their work, but confident in their skills.

> It's great [GD lab] cause they are constantly breaking us into small groups so we really understand what's going on. What we've been doing is - we had that long seminar on TMJ and we came back to lab and broke down into groups of 6 and went over all the muscles and the TMJ again so everyone had a chance to ask questions. Or, if someone really didn't understand a concept, they'd really go over it; then everyone had a chance to answer a question. I was good cause if you really didn't know it, you were put on the spot; but, for sure, you'd never forget it. (Female Z student, 10-84)
>
> I do okay. I spend one or two nights a week in lab and one or two days on the weekend. I study when I get home for a couple of hours and I go out every Friday and Saturday

> night. I have to cause I won't make myself crazy. Now, most people do much more than me, but I'm a solid 'B' student and that's okay. I could do better, but I don't want to put out the time. I have to be sane. (Male Z student, 4-1)

In spite of being divided into three GD lab groups, the Class worked together to successfully complete its first year of dental school. Once the students realized hey were all part of the same overall group, the Class worked and played hard together. They became very supportive of one another in the struggle to survive IDS.

Coping with Uncertainty.

The new curriculum of IDS was designed to provide earlier clinical exposure for the students, as well as combine all preclinical dental science courses into one. In order to enter the clinical arena before the third year, the students were required to master many skills and much information. It became necessary for the Class to make priority decisions as they progressed through the year. These decisions related to the level of uncertainty being faced.

From the beginning of the academic year, the Class exhibited a wide range of behaviors relating to the subject matter at hand. Those courses which appeared demanding received the most attention.

It appears that students take seriously those courses which

are 'hard', or very demanding and structured. Those courses which are perceived as 'soft' or not demanding do not receive the same level of attention. (Analytic note, 10-7)

The basic science courses were difficult and demanding, or 'hard'. Many outside hours were required to learn the massive amount of required material. For most students having a large amount of material to learn and studying for exams were not new concepts; therefore, while these courses were considered 'hard', they did not present unprecedented experiences. Attention appeared high due to perceived importance of material. Lectures in courses perceived as 'soft' were frequented by people who would read the newspaper, write notes to one another, or possibly go to sleep. In one course there was a constant undercurrent of talking while the material was being presented. Not that these activities did not occur during 'hard' lectures, but the extent was less than for a 'soft' lecture. 'Soft' seminars were often merely tolerated.

> Hey, you went because you had to. Oh sure, it got better toward the end, with the projects. It was all 'how-to-behave-like-a-human'. Sure, we discussed important topics, but I don't think anyone was ready for them now. (Male student, 6-4)
>
> After a while I give up [taking notes] and just wait for the demo. I only come to class because they get upset if we're not here, but I don't get anything out of the lectures. I

just wait for the demo. (Female student, 4-1)

The lab sessions considered 'soft' were treated with equal disregard. Attendance was good, since activities occurred in small groups and absence would have been noticed. Performance during the lab activity spoke of its perceived worth.

> I tried to observe the entire group today in clinic. There was nothing really new to learn, but they were to practice past activities. Several pairs of students appeared uninterested in the lab activities. They attempted to work with their partner for a short time and then find some distraction. They know the material because when asked a direct question, they answered correctly, but with apparent disinterest in the subject matter. (Field notes, 10-16)

It should be noted that none of the courses perceived as 'soft' were basic sciences. In contrast, the courses which were direct patient care and interpersonal skills oriented were the courses which received the described attention. Only basic science seminars not considered to be part of an upcoming exam would receive minimal value.

For a didactic course, uncertainty was met through attempts to master material for exams. Students learned early in the year that they could not learn all the required material; therefore, students concentrated on those topics deemed important by faculty in the courses. Exams became 'crises events', which were met through cutting classes prior to the exam in order to 'study

enough',

> Only a handful of students in lab this morning. There's a major MHB exam at 1pm today and many students stayed home or are in the library studying. (Field notes, 11-2)
>
> Many students left lab early today. There's a Radiology final this pm, and, since it is the only exam grade in the course, most students are studying hard. Several had past exams with them in lab. While they worked on the lab exercise, they discussed the answers on old exams, debating whether the answers were right or wrong. (Field notes, 11-13)

or by pulling 'all-nighters' to study all night long for an exam.

> I think the guys in my house have life backwards. We're always tired because we stay up late studying then we go to sleep in class. Something is definitely wrong. (Male student, 9-26)
>
> I got about 45 minutes of sleep last night. I really had to study [for this H/E exam]. (Female student, 11-6)

These techniques were considered effective in preparing for the uncertainty of exams; however, if classes were not attended in order to study, new material was missed thereby creating a constant need for catching up and creating additional stress.

The courses which dealt with dental sciences and clinical dentistry presented new levels of uncertainty for the Class. The General Dentistry (GD) course introduced the basic techniques of

dental practice. In the GD groups the students practiced and tried to master the techniques of general dentistry. Preventive Dentistry introduced the Class to clinical dentistry. It was during this course that the student experienced the role of clinician with their first patient. Periodontics was an expansion of Preventive Dentistry, providing the second experience as a dental clinician.

Each of these courses were enigmas for the student, offering diametrically opposite experience simultaneously. Learning a new technique and being the clinician at a dental chair were highly rewarding for the student. They offered to the student what the student perceived as the essence of dentistry.

> This is what I came for. Wow, I could be in clinic every day. It was great! (Male student, 9-84)
>
> I really like [Preventive Dentistry] lab. It's so tangible. I really feel like a dentist. (Male student, 9-84)

At the same time, extreme frustration was presented by these courses. For students with less manual skill than perceived, the inability to master new techniques was devestating.

> I'm getting frustrated. He's getting picky. At first he said it was okay, but each time he looks at it, he finds something else wrong. (Male student, 9-13)
>
> What's hard about the contours is learning to use the instrument. If it's too hot, it [wax pattern] all melts.

> Then you have to start over. It's a course in frustration! (Female student, 9-13)
>
> There are two very frustrating things here [at IDS]. First is when you work real hard and long on a project and the instructor 'blows you away', with no positives at all. The other is to get the best grade on a project you spent the least amount of time on. It really gets me. (Male student, 9-20)

For students used to earning A's in didactic courses, earning grades lower than 'A' for lab work, was difficult to accept.

> Three of the guys at my bench were talking about a friend in another GD group. Evidently he didn't pass the first practical exam and was devastated by it. (Field notes, 9-24)
>
> Yeah, he was a Biochem. major in college with a 3.5 GPA, but he has never worked with his hands before or been artistic. He's real 'bummed out'. (Male students, 9-24)
>
> In the clinical setting, the physical contact with a patient was difficult for some students.
>
> Let me know if this hurts? Is that too hard? (Male student operator, 9-14)
>
> Can you move the light? It's in my eyes. You'd better be careful. Remember, you get it next. (Male student patient, 9-14)
>
> I observed one group in PD lab today. Most students are

> timid in approaching their partners - not putting hands on the face or in the mouth. In contrast, one male student was so engrossed in his work, he was unaware of how close he was to his partner's face; however, it was evident by her face that she was uncomfortable. (Field notes, 10-16)

The clinical setting also introduced new concern for the students. Would the patient arrive for their appointment. Unlike the medical student whose patients already were admitted or presented to the hospital, the dental student was required to get his or her patients to come in to the school for treatment. While it was difficult enough to persuade a patient to come to a dental school clinic, this was complicated by being required to be in clinic at 8am several days in a row. Some students avoided the first concern by asking family members or upperclass friends to be their patients; but the time element was always a problem.

An amazing transition occurred in each student observed when they had a patient in the chair. They appeared more confident in themselves and their skills as a dentist. Though excruciatingly stressful, experiences with a patient made each student 'feel' like a dentist.

> We were in clinic this AM. I could be there all day. It was really fun. We learned how to do a plaque index, a bleeding 'some-thing-or-other' using the probe, and the self-cancer-exam. It was great! (Male student, 9-18)
>
> It was great to work on someone who didn't know the material

[PD lab]. This was the highlight of the semester so far.(Male student, 9-30)

This [clinic] is where I belong! I've been waiting for this all year, and it's just great! This is real dentistry. (Female student, 6-10)

GD lab presented unique uncertainties for the students. For many, GD was the first time hand work was evaluated by specific criteria. While these criteria were meant to ease the pressure of evaluation, it was the product of their manual labor which was to be evaluated.

A rumor is spreading about the practical exam yesterday. It seems that one group's projects may have been graded and 5 or 6 people may have failed. Concern about possible failure is evident in members of all three groups over this rumor. (Field note, 9-21)

It's harder to have practicals than an exam. If you get it back fast, it's not so dad; but if it takes them a week to grade it, by that time you know you've failed it (Female student, 4-8)

I know I failed it [the practical exam]. There's no was I could pass. Oh, well. Such is life. (Female student, 6-10)

Students found discrepancies in evaluation based on faculty bias on the project and faculty expectations of a given student's work. On practical exams, students found the objective criteria

were highly subjective. Grades appeared to be determined by who graded the practical and, as above, the faculty's expectation of the student in question.

> It's done all the time [sharing projects within and between groups], and that's how we know grading is biased. When there's a crunch, people share projects. When the same project gets graded by the same person differently [due to who handed the project to the instructor], you know something is wrong. (Female student, 2-25)
>
> Students told me about differences in practical grading between groups. They tested it out last semester, and a project which earned an 'A' in one group, only got a 'C' in another. (Field notes, 2-14)
>
> [Faculty member] was explaining what I did to earn a 'B'. While he was explaining I noticed he had my neighbor's project, not mine. Even though [neighbor] had gotten an 'A', he was able to find my errors on the tooth. It was real wierd. (Female student, 10-84)

Coping mechanisms.

Students responded to the pressures of the schedule and requirements of the curriculum through one of three mechanisms, which were used by the students to adjust to failure, disappointment, or success. These mechanisms were externalization, evasion, and cynicism.. Successful use of those behaviors and mechanisms allowed members of the class to survive

the first year of study at IDS.

Externalization.

Adapting the concept of 'discounting' as described by Mizrahi (1984), externalization was a mechanism for putting the blame for failure or disappointment outside of oneself. The student was not responsible for his or her not achieving his or her goals because the student did not have control of the situation.

> What's to do? If you mess up, you just do it over. That's how you learn, right? It's the lot of a dental student to be at the mercy of the faculty. [Smirk] (Female student, 4-22)
>
> Even in lab early on they told us not to worry about mistakes, that they [mistakes] were to help us learn. Now if you make a mistake, you're just behind and not working hard enough. (Male student, 4-11)

Giving credit to faculty biases and/or inconsistency allowed the student to be relieved of any guilt due to failure.

> Yeah, it doesn't pay to be a 'C' student. You're so average, you're okay. You have to be really bad or really great to get any help [in GD lab]. (Male student, 2-4)
>
> I've come to decide that the grade really isn't so important. Oh, it's important, but I think it's more important for me to feel like I'm learning. For instance, I got a low 'A' on this tooth, but [the instructor] just said

she would have given me a 'B'. I think it just depends on the instructor. So long as I learn. (Male student, 9-24)

I can never get it right. There's always something wrong. It's almost as if I can never please them. (Female student, 1-30)

A third way of externalizing credit for one's achievements was to give such credit to the system. Since one was merely a student, one did not have control over the system; therefore, one could not be blamed for problems caused by the system.

I'm a commuter and I don't have an alcohol torch. I am one of those who didn't get a full kit [because not enough was ordered], so I've only done work in lab. It's really hard not to be able to practice outside [to learn these skills]. (Female student who failed the first GD practical exam, 9-17)

Yeah, you just 'lop' it off. I don't know what to do from here, though. Wednesday [2 days from now] we get the lecture [on this technique]. That's not unusual. They did that with matrix bands. We worked with them for two weeks, then they told us how to use them. (Male student, 2-4)

Evasion.

The defense mechanism 'evasion' is similar to the concept of 'distancing' described by Mizrahi (1984). There were blatant mistakes or failures which could not be externalized. The student was forced to be responsible, but they would reduce the

immediate seriousness of the situation by 'evasion' tactics. If one did one's best, that's all you could do.

> You can't do it all in lab time, so you come at night or on weekends. But that's not enough. They only open (one lab at those times) and when that's full, too bad. It's always like that (when there are projects due) - S.R.O. (Male student, 1-30)
>
> I hate it. I really do. Oh, I'm doing okay in general, but I failed the last practical. I stayed here over [spring]break to work on the honors project, but since I failed a practical, I can't be considered an honors student anymore. (Female student, 3-18)

A second 'evasive' mechanism was to acknowledge that one simply cannot know or do it all. Since the curriculum was so fast paced and full of materials and skills to learn, it was not possible to accomplish it all; therefore, some mistakes occurred along the way.

> Oh, okay. I just got blown away on my practice practical. She really tore me up. They said most students fail this practical, but really--. If they weren't so subjective, well--. Oh yeah, but it's ridiculous. There's no way to do it all. Plus, the time is so fast. The whole class is ragging now because of the work. There's so much and no time to breathe. (Male student, 3-27)
>
> Hey, we just do the work so we can get on to the next

project. I don't really understand this stuff. It's like [gross anatomy]. We'd memorize for the test and spit it out, promptly to start the process over for the next test. Nobody remembers the stuff. So now for dissection lab, we have to learn it all over again. It's ridiculous, but that's how you survive. (Male student, 4-1)

Finally, rationalizing one's actions just to get the work completed helped the students evade responsibility for their actions. Cheating the system, which was directly in violation of the honor code of the school, became reasonable action in the face of perceived adversity.

I'm okay, but this lab really gets me down. They divided us into 5 smaller groups and the other 4 get instructors, but not ours. I had 3 projects ripped off at night here, and they just don't understand. I think I'm going to borrow someone else's and have them graded as mine. I just can't do them again. What a waste! (Male student, 12-3)

I know I'm not doing this right, but I don't care. I just want to get it done so I can go on. Enough is enough. Someday I'll regret not doing it right all the time, but not today. (Male student, 2-4)

Cynicism.

There were occasions when a combination of externalization and evasion was utilized by a student. Being scornful of the motives or virtue of others, mocking, or being sarcastic were

cynical behaviors which aided the student lay blame for current situation outside oneself, simultaneously denying one's own role in creating the situation.

> Sure, I've learned, we all have, exactly who to have grade something just to get it done, and who to go to if you really want to learn. It's easy to Psych. them out. They practically advertise. (Male student, 1-30)
>
> For some reason, today there seems to be help available. May be it's because this is a new unit, or at least we're supposed to start this unit, so there's not much for them to grade. When everybody's getting things graded, you get no help at all. (Female student, 2-4)

It was combinations of these mechanisms which aided the students to cope with the pressures of the massive material required for the basic science courses, the new and intricate manual skills required for general dentistry and clinical work, and the overall routine of the curriculum. They helped the student to manage the uncertainties presented by dental school.

Independence.

The third and final adjustment phase was development of independence. While some students continued to form study groups or have partners to help prepare for exams, the Class came to realize each individual would be held responsible for his or her own work, and that study groups were only as good as the members.

The courses which dealt with dental sciences and patient

care were the major contributors to 'independence'. Early in the GD lab course, several students, who were behind or didn't want to do a project, persuaded upper class members or peers to do work for them, expecting good evaluations in return. When the grades were not as high as expected, the tendency waned to ask upper class members or peers for help. During lab sessions there was usually one instructor for six to eight students. Instruction time was usually required for evaluation of projects. Often students were forced to rely on written descriptions of techniques plus two dimensional diagrams for instructions, and at times these were insufficient.

> I'm trying to copy this tooth [a model] in the plaster; but their directions are so grammatically poor, it's really hard. Plus my slow speed [handpiece] broke during the practical exam so I'm doing it with hand instruments and it's difficult. But, I'll get there. (Male student, 1-14)
>
> I don't even know what to do here. The lab manual is specific to the [last project], but this one is real vague. It's like we're supposed to just know. (Male student, 2-4)

In order to complete the required lab projects in the allotted time, it became necessary for Class members to be 'independent' in their work. The grade given was for their efforts alone, not for the collaboration of a pair or group. Mastering the intricate skills was difficult enough to require complete concentration of one's efforts.

There was a level of defiance which accompanied individualism.

> I must say I'm getting bored with this. I spent 20 hours outside of lab for a 'C'. That was time I could have spent on something important like Anatomy or Histo. I'm not going to do that again. (Male student, 9-19)
>
> Don't give me theory or background. Just give me what I need to know. More clinic time would be valuable, since that's all I'm interested in. I'm a Chemist, and if I want theory, I'll come back to it. (Male student, 9-28)
>
> One thing I have learned is to 'kiss ass'. When I get conflicting comments, I just roll with it and do it [the project] over. I won't let it get to me that much. (Male student, 4-11)

All in all, being individualistic often appeared self-serving and self-oriented. In essence, this was true; however, this response was to the demands of the curriculum, and not pure selfishness on the part of the student. Being individualistic became an essential coping mechanism, perhaps more important for the students than externalization, evasion, or cynicism, and more accepting of mistakes and successes as one's own responsibility without the need to evade the issue.

Discussion

The backgrounds and motivations of the students of IDS's Class of 1988 were not significantly different from previous

classes, but they knew they were experiencing a new curriculum, and that it was different from that experienced by any upper class member. This knowledge helped to develop the class identity, and helped the Class members become a cohesive group relative to IDS.

Interpersonal relationships developed within the Class were supportive and collegial. The fact that each member of the Class experienced the same courses and requirements bound the members together. It was common for those who easily understood didactic material to tutor those who did not. During non-supervised lab time [evenings and weekends], there were times when the few students who were gifted in GD lab would help others in their Class, not just their GD lab group, with mastering techniques. These activities were indicative of a mutual bond within the Class membership. There was an air of responsibility for one's neighbors.

Simultaneously, there developed a pattern of independence. The curriculum, especially in GD lab and the clinical courses, required each student to be responsible for his or her own work. In G lab, the evaluation system negatively reinforced assistance from faculty. In fact, points were subtracted when assistance was requested; thus, students did not usually actively pursue faculty help, even if such help was needed. Similarly, as the year progressed and the number of required projects increased in inverse proportion to the allotted time, students began to

exhibit self-oriented, self-sufficient, Machiavellian, behaviors, with a decrease in group support behaviors. With each crisis 9 i.e., major exam, or end of a GD unit requiring completion of all projects in the unit), students would exhibit one of the developed mechanisms to deal with uncertainty, and behave in a self-centered manner. It was not uncommon, when a crisis was acute, for members of the Class of become Machiavellian.

Comparison of behaviors of the Class of 1988 to the description of dental students in the literature, reveals little difference. The Class members did exhibit cynical and self-centered behavior; and clinically, they were less humane or other oriented. These attitudes expressed by the students appear to be in response to the curriculum and the educational environment created by dental school.

Unlike medical education where 1) the students are not required to master a technical art, and 2) the students do not assume primary responsibility for patient care, the dental student is required to learn volumes of scientific and clinical data, to master the intricate technical skills of the general dentist, and to assume primary responsibility for dental treatment for a patient. Each of these tasks alone is demanding. When all three are required of a student, manifest behaviors will be in direct response to the student's perception of the demands, and not in response to stated curricular goals.

Historically, dental educators have looked at the students

to explain the students' behaviors. This was demonstrated in the review of the literature. The educational environment created by the demands of the curriculum and the implementation of the curriculum by the faculty has been overlooked The pilot study which initially tested the new curriculum of IDS merely evaluated outcomes, or products, of the curriculum, without concern for the impact of the curriculum on the students, per se. In the case of the first year of study for the Class of 1988 of IDS, the development of the class identity, uncertainty coping mechanisms, and independence was directly related to the environment created by 1) the covert and overt new curriculum, and 2) the implementation process.

Conclusion

The Class of 1988 of IDS developed a Class identity which helped the Class members cope with uncertainty through defensive behavior developing independence. Students helped each other through crises when convenient, and were 'Machiavellian' when necessary. The new curriculum of IDS did not foster lasting collegiality within the Class or at all between the Class and the faculty, at least not during the first year of study. The hidden curriculum consisting of pressing demands, as perceived by the students, was the driving force for the students' responses. These curricular outcomes were unanticipated and were only accessible through qualitative research methodology.

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